

REMARKS/ARGUMENTS

This case has been carefully reviewed and analyzed in view of the Official Action dated 24 June 2005. Responsive to the rejections made in the Official Action, Claims 1, 5, 9 and 13 have been amended to clarify the combination of elements which form the invention of the subject Patent Application. Claims 17 – 20 were previously cancelled.

In the Official Action, the Examiner rejected Claims 1 – 16 under 35 U.S.C. § 103, as being unpatentable over Lin et al., U.S. Patent No. 6,717,372, in view of McKnight, U.S. Patent No. 5,036,255. The Examiner describes the Lin reference as essentially having all of the claimed elements, however, the Examiner admits that the reference fails to disclose the transformer having a core that has a central column between a first and a second column. The Examiner then refers to the McKnight reference as disclosing an apparatus for balancing discharge lamps by utilizing a driving circuit and transformer having a primary coil, a secondary coil, and a core, wherein the core has a central column between the first side and second side columns. The Examiner then concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the transformer having a core with a central column of McKnight in the system of Lin.

Before discussing the prior art relied upon by the Examiner, it is believed beneficial to first briefly review the structure of the invention of the subject Patent

Application, as now claimed. The invention of the subject Patent Application is directed to a multi-lamp drive device connected with a power source for driving at least a lamp. The drive device includes a drive circuit comprising a pulse width modulation controller for outputting a modulation signal and a converter connected to the pulse width modulation controller for forming an output excitation power source based on the power source. The drive device further includes a transformer comprising a magnetic core, a primary coil and a secondary coil. The magnetic core has a first side column, a second side column and at least a central column between the first and second side columns. The second side column is magnetically coupled to the first side column through a first magnetic gap and the central column has a second magnetic gap formed therein. The primary coil is wound around the first side column and electrically coupled with the output excitation power source. The secondary coil is wound around the second side column and electrically coupled with one end of at least a ballast component, the other end of the ballast component being connected to a first end of a balanced inductor. The drive device further includes at least a lamp having one end connected to a second end of the balanced inductor and the other end connected to the drive circuit.

In contradistinction, the Lin et al. reference is directed to a multi-lamp driving system having a driving circuit 10 coupled to a primary winding of a transformer T1. The transformer has a secondary winding coupled to a pair of

lamps 60 through a capacitor C, the opposing end of the lamps each being respectively coupled to a winding W1, W2 of a current balance circuit 50. The winding W1 is coupled to a feedback and control circuit 30 which controls the driving circuit responsive to the feedback current provided through the winding W1.

Not only does the reference fail to disclose a transformer having at least a central column between the first and second side columns, but the reference fails to disclose or even suggest the second side column being magnetically coupled to the first side column through a first magnetic gap and the central column having a second magnetic gap formed therein, as now claimed.

The McKnight reference does not overcome the deficiencies of Lin et al. The McKnight reference is directed to a control device for energizing a lamp. The system incorporates a pulse width modulator 14 having an output coupled to power switches 30 for providing energization of a fly back transformer circuit 16. The output of transformer circuit 15 is coupled to an inductor 40 having windings 52 and 60 formed on opposing side columns thereof. The winding 52 and inductor 40 provide a balanced output to lamp circuit 18 such that the voltage and current applied to the lamps are balanced, column 2, lines 64 – 68. Thus, the inductor 40 with its windings 52 and 60 is equivalent to the current balance circuit 50 of Lin et al., and not the transformer T1. Therefore, one skilled in the art would not look to the teachings of McKnight's balanced inductor having a center column for

application to the excitation transformer T1 of Lin et al., as suggested by the Examiner. Further, while McKnight discloses a core having a gap in the central column, nowhere does the reference disclose or suggest a transformer core having two magnetic gaps, one in the central column and another in the magnetic circuit between the first and second side columns, as now claimed.

Accordingly, the combination of Lin et al. and McKnight, as suggested by the Examiner, is improper, as there is no motivation for that combination. Neither reference discloses or suggests utilizing an excitation transformer having a central column disposed between first and second side columns. Arguendo, even if it were proper to combine Lin et al. and McKnight, such combination still fails to make obvious the invention of the subject Patent Application, as now claimed. Neither Lin et al. nor McKnight disclose or suggest a magnetic core having the second side column being magnetically coupled to the first side column through a first magnetic gap and the central column having a second magnetic gap formed therein. Thus, as neither reference discloses or suggests the combination of elements which form the invention of the subject Patent Application, their combination cannot make obvious the invention of the subject Patent Application, as now claimed.

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For all the foregoing reasons, it is now believed that the subject Patent Application has been placed in condition for allowance, and such action is respectfully requested.

Respectfully submitted,
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